

AMENDMENTS TO THE DRAWINGS:

The attached sheet includes changes to Figure 2. This sheet, which includes Figure 2, replaces the original sheet including Figure 2. In Figure 2, the partitions made of same material as the porous, electronically nonconductive, non-ion-selective partition wall, which are placed at least substantially transverse to said electrodes are now labeled as item "9".

Attachment: Replacement Sheet

REMARKS

This application is amended in a manner to place it in condition for allowance.

Claims 1-7, 9-22 remain in this application.

Claim 8 has been canceled.

Claims 1-3, 10, 12, 15, and 18-22 are amended to address the objections and indefinite rejections, as well as, recite the features in a manner consistent with U.S. patent practice. It is believed that no new matter has been added.

The Drawings were objected to for not showing the feature of original claim 3. However, these features are shown in Figure 2, and Figure 2 has been amended to indicate these features as item "9". The specification is accordingly amended at page 12 to describe the feature of claim 3. It is believed that no new matter has been added to the present application, as the feature was already described in the original claim 3 and drawn in Figure 2.

Claim 8 was object to for not further limiting the claimed invention. This claim is cancelled.

Claim 19 and 20 were objected for reciting structural features, but depending from a method claim.

Accordingly, the claims 19 and 20 are amended as an independent device claims reciting the structural features of method claims 1 and 16.

Therefore withdrawal of the objection is respectfully requested.

Claims 2 and 3 were rejected under 35 USC 112, second paragraph as being indefinite. This rejection

The position of the Official Action was that claim 2 was indefinite for reciting "at least one" anode and "at least one" cathode in reference to a pair of electrodes. Accordingly, "at least one" is removed from the claim to be consistent with the meaning of "pair".

The Official Action further stated that claim 2 was indefinite for referring to the open spaces as being in electrically conductive contact with the electrodes. However, it is respectfully noted that the open space are in contact with the electrodes, e.g., as shown in Figure 2, and organic waste, e.g., water as recited in claim 4, which is conductive, flows into the in the cell comprising these open spaces. See, e.g., specification page 12, lines 7-23.

Therefore, the claims are definite, and withdrawal of the rejection is respectfully requested.

Claims 1, 4-6, 9-11, 13-14 and 16-17 were rejected under 35 USC 102(b) as being anticipated by HABERMANN et al. ("HABERMANN"), claim 12 was rejected under 35 USC 103(a) as being unpatentable over HABERMANN in view of RICHTER et al. ("RICHTER"), and claim 15 was rejected under 35 USC 103(a) as

being unpatentable over HABERMANN. These rejections are respectfully traversed for the reasons that follow.

The Official Action referred to page 132, which discloses that "the electrolyte used was a cation/anion-exchanger (e.g., at the left column, 7<sup>th</sup>-6<sup>th</sup> line from the bottom of the page).

However, HABERMANN does not disclose the presence of a "porous, electronically non-conductive, non-ion-selective partition wall" that separates the cathode and the anode.

As evidenced by the definition provided by "Merriam-Webster Online Dictionary", an electrolyte is an electrically conductive material. Accordingly, an electrolyte cannot serve as an electronically non-conductive wall.

Thus, HABERMANN fails to disclose or suggest the invention.

Regardless of the ability of RICHTER to teach that for which it is offered, RICHTER cannot remedy the shortcomings of HABERMANN for reference purposes.

Therefore, withdrawal of the rejection is respectfully requested.

Claims 1, 2, 4-7, 9, 10, and 21 were rejected under 35 USC 103(a) as being unpatentable over KIM et al. EP 0827229 A2 ("KIM '229") in view of CHAO et al. US 4,581,105 ("CHAO"). This rejection is respectfully traversed for the reasons that follow.

The Official Action stated that a person having ordinary skill in the art would have been motivated to substitute a non-woven fiberglass separator as described by CHAO for the sintered glass separator of KIM '229.

However, CHAO is directed to electrochemical cells, and the claimed invention relates to biofuel cells. The presence of biomass in the latter poses different requirements to the separators in view of problems such as clogging of the pores of the separator (See, e.g., page 6 of the present specification, lines 2-6). Notably, the list of separators mentioned in CHAO (column 6, lines 10-14) includes porcelain and asbestos, for which important practical drawbacks have been found by the inventors (page 6, lines 2-4 of the present application).

Accordingly, for one of ordinary skill in the art of designing bio-fuel cells, the substitution of a non-woven fiberglass separator would not have yielded predictable results, and, is therefore unobvious.

Claims 1, 2, 4-7, 9-10, 17 and 21 were rejected under 35 USC 103(a) as being unpatentable over KIM et al. WO 01/04061 A1 ("KIM '061") in view of CHAO et al. US 4,581,105 ("CHAO"). This rejection is respectfully traversed for the reasons that follow.

With respect to claims 1, 4, 7, and 21, the Official Action stated that a person having ordinary skill in the art would have been motivated to substitute a non-woven fiberglass

separator as described by CHAO for the sintered glass separator of KIM '061.

However, as discussed above, CHAO is directed to electrochemical cells, and the claimed invention relates to biofuel cells. The presence of biomass in the latter poses different requirements to the separators in view of problems such as clogging of the pores of the separator (See, e.g., page 6 of the present specification , lines 2-6). Notably, the list of separators mentioned in CHAO (column 6, lines 10-14) includes porcelain and asbestos, for which important practical drawbacks have been found by the inventors (page 6, lines 2-4 of the present application).

Accordingly, for one of ordinary skill in the art of designing bio-fuel cells, the substitution of a non-woven fiberglass separator would not have yielded predictable results, and, is therefore unobvious.

Therefore, withdrawal of the rejection of claims 1, 4, 7 and 21, as well as claims depending therefrom, e.g., 5-6, 9-10, and 17 is respectfully requested.

With respect to claim 2 in particular, the Official Action stated that the obviousness follows from the fact that it is well-known in the fuel cell art to have two or more pairs of electrodes stacked in series to increase the voltage output.

However, the claimed invention is not directed to a simple duplication of fuel cell units. On the one hand because

use needs to be made of an electrically conductive but non-ion conductive wall (bipolar plate) connective the anode and cathode of each pair of electrodes (which is obviously not necessary when stacking, for example, batteries). On the other hand because the non-conductive, non-ion selective partition wall (as also claimed in claim 1) is now of a compartmented design comprising channels. Such measures are not obvious to one of ordinary skill in the art.

Therefore, withdrawal of claim 2 is respectfully requested.

Claims 11 and 14-17 were rejected under 35 USC 103(a) as being unpatentable over KIM '061 in view of CHAO , further in view of HABERMANN. This rejection is respectfully traversed for the reasons that follow.

KIM '061 and CHAO were offered for the reasons discussed above.

Regardless of the ability of HABERMANN to teach that for which it is offered, HABERMANN cannot remedy the shortcomings of KIM '061 and CHAO for reference purposes. Indeed, as discussed above relative to the anticipation rejection HABERMANN is dissimilar to the claimed invention.

Therefore, withdrawal of the rejection is respectfully requested.

Claim 12 was rejected under 35 USC 103(a) as being unpatentable over KIM '061 in view of CHAO , further in view of

RICHTER; claim 13 was rejected under 35 USC 103(a) as being unpatentable over KIM '061 in view of CHAO , further in view of HERTL et al. US 4,578,323 ("HERTL"); claim 18 was rejected under 35 USC 103(a) as being unpatentable over KIM '061 in view of CHAO , further in view of YAMAMOTO US 4,883,724 ("YAMAMOTO"); claim 22 was rejected under 35 USC 103(a) as being unpatentable over KIM '061 in view of CHAO , further in view of YING et al. US 6,183,091 ("YING"). These rejections are respectfully traversed.

RICHTER, HERTYL, YAMAMOTO, and YING are each offered for teaching the features of 12, 13, 18 and 22. However, regardless of the abilities of these publications to teach that for which they are offered, they fail to remedy the shortcomings of KIM '061 and CHAO for reference purposes, as discussed above.

Therefore, withdrawal of these rejections is respectfully requested.

In view of the amendment to the claims and the foregoing remarks, applicants believe that the present application is in condition for allowance at the time of time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

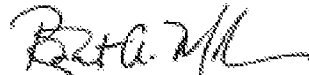
Please charge the fee of \$440.00 for the two extra independent claims added herewith, which is being paid online simultaneously herewith by credit card.



The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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**APPENDIX:**

The Appendix includes the following item(s):

- a Replacement Sheet for Figure 2 of the drawings
- Merriam-Webster Online definition of electrolyte